

EX

Notice of Allowability	Application No.	Applicant(s)	
	09/809,646	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	Thoi V. Duong	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 9/22/2006.
2. ☒ The allowed claim(s) ~~is~~ are 1-9, 11, 13, 26-28, 30 and 36-50.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) <i>None</i> 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>9/22/06</u> 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|---|--|

DETAILED ACTION

1. This office action is in response to the Amendment filed September 22, 2006.

Accordingly, claims 1-3, 11, 36-41 and 45-47 were amended, and claims 10, 12, 14-25, 29 and 31-35 were cancelled. Currently, claims 1-9, 11, 13, 26-28, 30 and 36-50 are pending in this application.

Allowable Subject Matter

2. Claims 1-9, 11, 13, 26-28, 30 and 36-50 are allowed.

The following is an examiner's statement of reasons for allowance: none of the prior art of record fairly suggests or shows all of the limitations as claimed. Specifically,

Re claims 1-3 and 39-41, none of the prior art of record discloses, in combination with other limitations as claimed, an electronic equipment comprising:

a substrate having an insulating surface;

a semiconductor layer formed over the surface, said semiconductor layer having a channel forming region, an LDD region, a source region and a drain region;

a gate insulating film formed over said semiconductor layer;

a first conductive film formed over said gate insulating film; and

a second conductive film formed over said first conductive film,

wherein the width of said first conductive film in the longitudinal direction of said channel forming region is larger than that of said second conductive film,

wherein said LDD region entirely overlaps with said first conductive film with said gate insulating film interposed therebetween and contacts said source region or said drain region,

wherein the gate insulating film has a first region having a first thickness where the gate insulating film is covered by the first conductive film and a second region having a second thickness where the gate insulating film is not covered by the first conductive film, and the second thickness is thinner than the first thickness, and

wherein the gate insulating film has a tapered shape in cross section at a portion between the first region and the second region.

The most relevant references, JP 06-148685 (JP'685) in view of US 5,767,531 issued to Yoshinouchi, fail to disclose or suggest a gate insulating film having a tapered shape in cross section at a portion between the first region and the second region.

As shown in Fig. 1, JP'685 discloses a liquid crystal display device comprises a semiconductor layer 2 having a channel forming region 7c, an LDD region 7b, a source region and a drain region 7a; a gate insulating film 3 formed over said semiconductor layer; a first conductive film 4 formed over said gate insulating film; and a second conductive film 5 formed over said first conductive film,

wherein the width of said first conductive film in the longitudinal direction of said channel forming region is larger than that of said second conductive film, and

wherein said LDD region entirely overlaps with said first conductive film with said gate insulating film interposed therebetween and contacts said source region or said drain region.

Meanwhile, as shown in Figs. 1 and 3A, Yoshinouchi discloses a gate insulating film 30 has a first region 6b having a first thickness d_2 where the gate insulating film is covered by the conductive film 8 and a second region 6a having a second thickness d_1

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where the gate insulating film 30 is not covered by the conductive film 8, and the second thickness d_1 is thinner than the first thickness d_2 . However, the gate insulating film does not have a tapered shape in cross section at a portion between the first region and the second region.

Re claim 11, none of the prior art of record discloses, in combination with other limitations as claimed, a liquid crystal display device comprising a pixel TFT and a driver circuit TFT, each having a semiconductor layer formed on an insulating surface, a gate insulating film formed over said semiconductor layer, a first conductive film formed over said gate insulating film, and a second conductive film formed over said first conductive film;

wherein the semiconductor layer of said pixel TFT comprises:

- a channel forming region overlapping with said second conductive film with said gate insulating film interposed therebetween;
- a first LDD region contacting said channel forming region and overlapping with said first conductive film with said gate insulating film interposed therebetween,
- a second LDD region contacting said first LDD region,
- a source region and a drain region contacting said second LDD region,
- and

wherein said semiconductor layer of said driver circuit TFT comprises:

- a channel forming region overlapping with said second conductive film with said gate insulating film interposed therebetween;

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a third LDD region contacting said channel forming region and entirely overlapping with said first conductive film with said gate insulating film interposed therebetween;

a source region or a drain region contacting said third LDD region, and wherein said first conductive film has a tapered shape in cross section at an edge portion, and

wherein the width of said first conductive film in the longitudinal direction of the channel forming region is larger than that of said second conductive film.

The most relevant reference, USPN 6,365,917 B1 to Yamakazi, discloses a similar formation of a TFT. However, the reference is overcome by a statement of common ownership submitted by Applicant on June 14, 2004.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

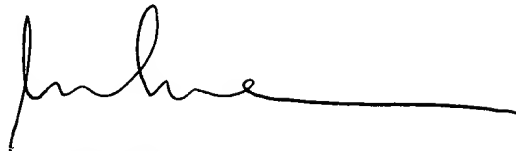
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms, can be reached at (571) 272-1787.

Thoi Duong



11/20/2006



DUNG T. NGO
PRIMARY EXAMINER